

REMARKS

Favorable reconsideration and allowance of the subject application are respectfully requested. Claims 17-62 are pending in the application, with claims 24 and 60 being independent. Claims 61-62 have been added by this amendment.

In the Reply to the Restriction Requirement submitted May 2, 2002, Applicants elected claims 17-23, added claim 60 and amended claims 17-23 to depend from claim 60. Because claims 17-23 were "ungrouped," as the Examiner stated in the Office Action dated April 2, 2002, those claims were not considered examinable. Because the Examiner did not restrict claims 17-23, Applicants respectfully request that the Examiner consider claims 60 and its dependent claims 17-23 in the examination of the present application. Since claims 24-40 are drawn to a manufacturing method of a film acoustic wave device and claims 60, and 17-23 are drawn to a manufacturing method of a film acoustic wave device, there would not be a serious burden on the PTO if claims 60 and 17-23 were examined.

Claim Rejections Under 35 U.S.C. 102(a)

The Examiner rejected claims 24-33 and 40 under 35 U.S.C. 102(a) as being anticipated by Krishnaswamy et al. (US 5,185,589); Curran et al. (US 3,401,275); Vale et al. (US 5,194,836); or Japanese Kokai Patent Application No. Hei 5[1993]-259804. These

rejections are traversed insofar as they pertain to the pending claims.

Claims 24-40 have been amended in an effort to clarify the language of the claims in regard to the embodiments of the present application. Claim 24 recites the steps of manufacturing a wafer having a plurality of acoustical wave devices formed on the wafer. During the formation of the acoustical wave devices, the piezoelectric material may not be uniform throughout the wafer. Because of this non-uniformity, each of the acoustical wave devices (which are divided out from the wafer) will produce different frequency ranges. In order to avoid this problem, and to ensure that each of the acoustic wave devices exhibit common/uniform operational characteristics, the present invention modifies a characteristic of the device such as a pattern shape.

Each of the above cited prior art references fail to teach or suggest a wafer having a plurality of acoustic wave devices formed thereon and exhibiting common operational characteristics, as recited in the independent claim, as amended. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection.

Applicants would like to direct the Examiner's attention to MPEP 2131.01, wherein it states that only one reference should be used in making a rejection under 35 U.S.C. 102. Multiple references

in a 35 U.S.C. 102 rejection are proper when the extra references are cited to: prove the primary reference contains an enabled disclosure; explain the meaning of a term used in the primary reference; or show that a characteristic not disclosed in the reference is inherent.

The multitude of references that the Examiner has cited was not utilized within the meaning of any of the above-mentioned exceptions. Therefore, Applicants respectfully request, and in an effort to place less of a burden on Applicants during any potential appeals process, that the Examiner apply only one reference to any future 35 U.S.C. 102 rejection.

Claim Rejections Under 35 U.S.C. 103(a)

The Examiner rejects: claim 34 under 35 U.S.C. 103(a) as being unpatentable over Japanese Kokai Patent Application No. Hei 5[1993]-259804, Krishnaswamy et al., or Vale et al., in view of Berlincourt (US 3,676,724); and claims 35-39 under 35 U.S.C. 103(a) as being unpatentable over Japanese Kokai Patent Application No. Hei 5[1993]-259804, Krishnaswamy et al., Vale et al., or Curran (US 3,401,275). These rejections are respectfully traversed.

Claims 34, 35-39, and newly added claims 61-62 are dependent claims, which Applicants submit define over the prior art at least for depending from an allowable base claim. Accordingly, Applicants

respectfully request that the Examiner withdraw the rejections.

Conclusion

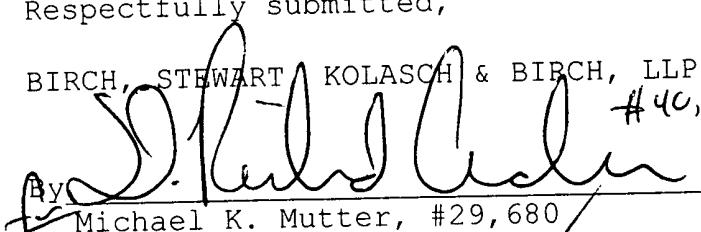
In view of the above amendments and remarks, this application appears to be in condition for allowance and the Examiner is, therefore, requested to reexamine the application and pass the claims to issue.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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2565-0225P

Attachment: Version With Markings To Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

The claims have been amended as follows:

24. (Once Amended) A wafer having a plurality of [film] acoustic wave devices formed thereon and exhibiting common operational characteristics, each of said acoustical wave devices manufactured according to a method comprising:

(a) forming a ground electrode on the wafer which is intended to be placed on top of a semiconductor substrate] which is made up of one of a plurality of pieces into which a wafer is divided];

(b) forming a piezoelectric thin film on top of the ground electrode, wherein the piezoelectric thin film varies in at least one characteristic across the wafer; and

(c) forming at least one upper electrode on top of the piezoelectric thin film,

wherein at least the ground electrode, the piezoelectric thin film and the at least one upper electrode form components, [a pattern of the film acoustic wave device is formed] as a result of steps (a)-(c), in each of the plurality of acoustical wave devices, and

wherein at least one component in some of the plurality of acoustical wave devices is modified in its operational

characteristic to compensate for the variation in the at least one characteristic of the piezoelectric thin film and is based on the location of the at least one acoustical wave device on the wafer
[a shape of the pattern of the film acoustic wave device is dependent upon an intended position of the semiconductor substrate on the wafer].

25. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein a length of the at least one upper electrode is dependent upon the intended position of the semiconductor substrate on the wafer.

26. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein a width of the at least one upper electrode is dependent upon the intended position of the semiconductor substrate on the wafer.

27. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein the step of forming at least one upper electrode [comprises] forms a plurality of upper electrodes, and wherein distances between each of the plurality of upper electrodes is dependent upon the intended position of the semiconductor substrate on the wafer.

28. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein said step (c) further includes a step, (c1) connecting the at least one upper electrode to a bonding pad, and

wherein a shape of the bonding pad is dependent upon the intended position of the semiconductor substrate on the wafer.

29. (Once Amended) The wafer [film acoustic wave device] according to claim 28, wherein an area covered by the bonding pad is dependent upon the intended position of the semiconductor substrate on the wafer.

30. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein said step (c) further includes steps, (c1) connecting the at least one upper electrode to a bonding pad; and

(c2) connecting the at least one upper electrode and the bonding pad to a connecting pattern,

wherein a shape of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

31. (Once Amended) The wafer [film acoustic wave device] according to claim 30, wherein a length of the connecting pattern is

dependent upon the intended position of the semiconductor substrate on the wafer.

32. (Once Amended) The wafer [film acoustic wave device] according to claim 30, wherein a width of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

33. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein said step (c) further includes steps,

(c1) connecting the at least one upper electrode to a bonding pad; and

(c2) connecting the at least one upper electrode and the bonding pad to a connecting pattern,

wherein the connecting pattern is formed with an air bridge.

34. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein the method according to which the device is manufactured includes a step,

(d) forming a capacitor on the same semiconductor substrate as the film acoustic wave device,

wherein a capacitance of the capacitor is dependent upon the intended position of the semiconductor substrate on the wafer.

35. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein the semiconductor substrate is made of gallium arsenide (GaAs); the piezoelectric thin film is made of lead titanate (PbTiO₃); and the at least one upper electrode is a conductor substantially made of platinum (Pt).

36. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein the semiconductor substrate is made of silicon (Si); the piezoelectric thin film is made of lead titanate (PbTiO₃); and the at least one upper electrode is a conductor substantially made of Platinum (Pt).

37. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein the piezoelectric thin film is made of PZT (PbTiO₃-PbZrO₃); and the at least one upper electrode and the ground electrode is a conductor substantially made of platinum (Pt).

38. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein the piezoelectric thin film is made of zinc oxide (ZnO).

39. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein the piezoelectric thin film is made of

aluminum nitride (AlN).

40. (Once Amended) The wafer [film acoustic wave device] according to claim 24, wherein an inductor is intended to be formed between the semiconductor substrate and the ground electrode.

New claims 61 and 62 have been added.